

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

100098
Floor 16, Tower A, InDo Building, A48 Zhichun
Road, Haidian District, Beijing, 100098 P.R.China
KANGXIN & PARTNERS

Samson G YU

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43 bis.1)

Date of mailing

~~28~~ DEC 2006 (28 · 12 · 2006)

Applicant's or agent's file reference

P7502PAUL

FOR FURTHER ACTION

see paragraph 2 below

International application No.

PCT/CN2006/000210

International filing date (day/month/year)

09.Feb 2006 (09.02.2006)

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC

H03F3/00 (2006.01) i

Applicant

APEXONE MICROELECTRONICS INC. et al

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

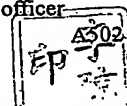
Name and mailing address of the ISA/CN

The State Intellectual Property Office, the
P.R.China 6 Xitucheng Rd., Jimen Bridge,
Haidian District, Beijing, China 100088
Facsimile No. 86-10-62019451

Date of completion of this opinion

02.Nov 2006 (02.11.2006)

Authorized officer



Telephone No. 86-10-62084932

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/CN2006/000210

Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed
☐ filed together with the international application in electronic form
☐ furnished subsequently to this Authority for the purposes of search

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE
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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement:

Novelty (N)	Claims 1-20	YES
	Claims	NO
Inventive step (IS)	Claims 1-20	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-20	YES
	Claims	NO

2. Citations and explanations

(1) The documents cited in the search report have been taken into consideration here:

D1: EP1612934A1

D2: JP2005-229306A

D3: US2005016223A1

D4: US20040169553A1

(2) Claims 1-20 meet the criteria set out in PCT Article 33(2)-(4) with respect to the prior art at hand.

D1 discloses a class-D amplifier which amplifies an input signal applied to an signal input of said amplifier (21) to generate an amplified signal output by an signal output (28a,28b) of said amplifier, includes: a comparator (23) which compares the extended digital subscriber line (XDSL) input signal with switch signal to generate pulse width modulated signal; a driving unit (24) which amplifies the generated pulse width modulated signal to generate amplified output signal and a feedback circuit which generates self-oscillating switch signal for comparator.

D2 discloses a class-D amplifier, includes: a pulse width modulation (PWM) signal generation unit (3) which generates PWM signal by comparing reference signal (1) which is frequency modulated using signal (2) having frequency outside voice band frequency, and corrected analog signal; an electric switch (6) which performs power amplification of PWM signal and a filter (7) which filters the amplified PWM signal to output demodulated signal.

D3 discloses a class-D amplifier for pulse-width-modulating an analog input signal to output a pulse-width-modulated signal, includes: a differentiating circuit for differentiating the pulse-width-modulated signal of the class-D amplifier; and a negative feedback circuit for feeding back the differentiated signal of the differentiating circuit to an input side of the class-D amplifier in a negative feedback manner.

D4 discloses a pulse width modulation amplifier which is capable of reducing unwanted radiation from a PWM output thereof, which can cause EMI, while reducing manufacturing costs thereof. A triangular wave-generating circuit (3) of the PWM amplifier outputs a triangular wave. The triangular wave has a waveform steep or gentle in pulse rising and falling slopes dependent on a value of current flowing through an FET (116) or an FET (117). The value of current is changed by a current flowing through a FET (112). A switching element (32) changes voltage applied to the gate of an FET (110), for control of increase and decrease in the current flowing through the FET (112). This enables the triangular wave to be generated such that it is formed by pulses having different periods. An input signal is subjected to PWM amplification based on the triangular wave generated.

It is obvious that not all the technical features of independent claims 1,8,16 are disclosed by D1, D2, D3 or D4, thus claims 1,8,16 have novelty under PCT Article 33(2);

And thus their corresponding dependent claims 2-7,9-15,17-20 have novelty under PCT Article 33(2);

Claims 1-20 are not obvious to a person skilled on the basis of D1, D2, D3, D4 or their combination, thus they have inventive step under PCT Article 33(3);

Claims 1-20 have industrial applicability under PCT Article 33(4), because the signal modulation circuit or the nonlinear amplifier can be made and used in industry.

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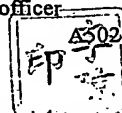
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